A1

1.(amended) A method of producing flat glass in which glass batch is melted using burners fired by fuel and oxygen resulting in the formation of foam on the surface of the molten glass, and a burner downstream of such burners producing foam produces a flame which is diffuse, luminescent and impinges on the surface of the glass dispersing said foam, said flame being cooler than the surface of the glass it contacts.

A2

6.(amended) An improved method of producing flat glass wherein the glass is melted and formed into a continuous ribbon wherein the improvement comprises melting the glass using burners fueled by fuel and oxygen resulting in formation of foam on the surface of the molten glass and dispersing the foam by directing a diffuse, luminescent flame onto the surface of the glass carrying the foam, said flame being cooler than the surface of the glass it contacts.

REMARKS

This response is being presented in response to the Examiner's action of July 2, 2002. The Examiner has indicated that claims 1-6 have been rejected, and claim 7 has been withdrawn from consideration as being drawn to a non-elected species. In light of the following detailed arguments, it is respectfully submitted that the claims fully distinguish over the applied prior art.

In paragraph 4 of the outstanding Office Action, the Examiner notes an oral election on June 25, 2002, to prosecute the invention of claim group I, claims 1-6. Applicants' representative hereby affirms this oral election to claim group I, claims 1-6, without traverse, and without prejudice with regard to any future continuation or divisional applications based upon this application.

The Examiner rejected claims 1-6 under 35 USC §103 as being unpatentable over LeBlanc et al. alone or in combination with Brown et al. or Moreau et al. The Examiner also rejected claims 1-6 under 35 USC §103 as being unpatentable over LeBlanc et al. alone, or in combination with either Moreau et al. or Brown et al. and further in view of Phillipe et al. The Examiner stated that LeBlanc discloses the process of melting glass batches with a burner fired with fuel and oxygen. The flame can be adjusted to be luminous and infringes on the surface of the glass and appears to diffuse. The Examiner notes that no step for producing flat glass is recited in the claim and thus the claim does not distinguish from LeBlanc on this basis. The Examiner does state, however, that both Brown and Moreau do show the production of flat glass, and further states that one skilled in the art would have combined the flat glass of either of these references with Brown to show this limitation. The Examiner states that Phillipe shows an improved burner having separate oxygen and fuel outlets that produce a wide and luminous flame. The Examiner states that the burner could be used in glass furnaces and says that it would thus have been obvious to use this in the manner shown by LeBlanc to gain the enefits of the improved burner.

Before discussing the prior art in detail, applicants wish to discuss the present invention as defined in the independent claims. Independent claim 1, as amended, defines a method of producing flat glass. A glass batch is melted using burners fired by fuel and oxygen resulting in the formation of foam on the surface of the molten glass. A burner downstream of such burners producing foam produces a flame which is diffuse, luminescent and impinges on the surface of the glass dispersing said foam, said flame being cooler than the surface of the glass it contacts.

Similarly, amended independent claim 6 defines an improved method of producing flat glass. The glass is melted and formed into a continuous ribbon. The glass is melted using burners fueled by fuel and oxygen resulting in formation of foam on the surface of the molten glass. The foam is dispersed by directing a diffuse, luminescent flame onto the surface of the glass carrying the foam, said flame being cooler than the surface of the glass it contacts.

As shown by the Examiner, the flame from the downstream burner of LeBlanc has been shown to reduce foam. However while LeBlanc teaches this effect, he is using the burner in a manner conflicting with the manner the downstream burner is utilized as defined in claims 1 and 6 of the present application. Specifically, the burner of LeBlanc is used in a conventional manner wherein it is used to heat the glass. For example, column 9, lines 46-48, indicates the use of the burner "substantially raising the surface glass temperature" in order to remove "incompletely reacted raw glass-forming material or insufficiently mixed surface materials". LeBlanc indicates in column 9, lines 61-65, that the benefit of the foam removal is seen in the increased heat transfer to the glass from the burner.

The flame used in the present invention is distinctly different from that used by LeBlanc. The diffuse, luminous "lazy" flame of the present invention does not heat the glass at all. This is clarified by the amendment to claims 1 and 6, which indicates that the temperature of the flame is cooler than the surface of the glass it contacts. This use of a cool flame is not suggested by LeBlanc, and in fact is taught against in LeBlanc, as a cooler flame would be contrary to it's stated teaching of "substantially raising the surface glass temperature" in order to remove "incompletely reacted raw glass-forming material or insufficiently mixed surface materials".Thus

using a cooler flame in LeBlanc is not obvious, and in fact would destroy the function of the invention of LeBlanc.

The inventions of Brown and Moreau were merely cited to show that it would be obvious to use the teaching of LeBlanc with a flat glass process. Neither of them teach or suggest the relatively cool flame of amended claims 1 and 6.

Phillipe is used by the Examiner to show an improved burner. The burner assembly of Phillipe, while of novel configuration, still essentially shows a burner constructed in a conventional manner, with outlets for the fuel and the oxidant close to one another within a single burner block. Such a burner would provide a relatively intense flame to provide heat to the glass. In contrast, the present invention employs a burner assembly with fuel and oxygen ports which are remote from one another to produce a diffuse flame.

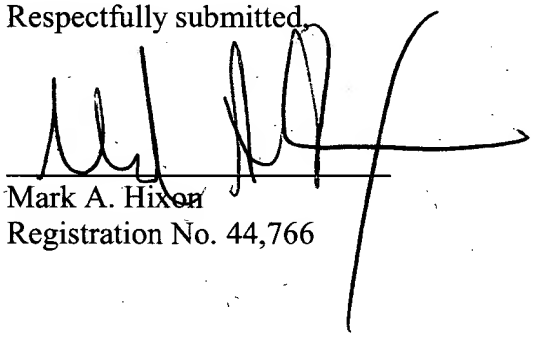
However, even if Phillipe did show a burner as used in the present invention, it would not be proper to suggest that such a burner could be combined with the LeBlan reference. As stated previously, LeBlanc teaches a flame hotter that the glass to which it is applied, to heat the glass to burn off unused reactants. Even if Phillipe showed a burner that generated a lower intensity flame, having a temperature less than that of the glass sheet, combining it with the system of LeBlanc would destroy the function of LeBlanc, as the glass would not be heated enough to burn off the unused reactants. Again, it is respectfully asserted that it is improper to suggest the inclusion of a lower temperature flame in LeBlanc, as it is destroys a stated advantage of LeBlanc to do so.

Based upon the above, it is respectfully asserted that no reasonable combination of LeBlanc, alone or in conjunction with any of the applied secondary references, teaches the present invention as claimed in claims 1 and 6.

The dependent claims 3-5, are believed to be allowable based, at least, upon their dependence on allowable base claims as discussed above.

In view of the above remarks, a favorable reconsideration of the present application and the passing of this application to issue with all claims allowed are courteously solicited. If the Examiner wishes to modify any of the language of the claims in an effort to move the application towards allowance, a telephone call to the undersigned would be greatly appreciated.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In The Claims:

1.(amended) A method of producing flat glass in which glass batch is melted using burners fired by fuel and oxygen resulting in the formation of foam on the surface of the molten glass, and a burner downstream of such burners producing foam produces a flame which is diffuse, luminescent and impinges on the surface of the glass dispersing said foam , said flame being cooler than the surface of the glass it contacts.

6.(amended) An improved method of producing flat glass wherein the glass is melted and formed into a continuous ribbon wherein the improvement comprises melting the glass using burners fueled by fuel and oxygen resulting in formation of foam on the surface of the molten glass and dispersing the foam by directing a diffuse, luminescent flame onto the surface of the glass carrying the foam, said flame being cooler than the surface of the glass it contacts.